Shenandoah, Schuylkill county: the rain storm throughout this section on the 4th was the most severe for a number of years; no less than twelve collieries in Mason Valley were flooded; railroad trains were delayed and great damage done. Three washouts occurred between Delano and Ashland on the Lehigh Valley Railway.

Lock Haven, Clinton county: the flood on the Susquehana River reached its height on the 5th and submerged three-fourths of the city; no lives were lost, but the damage was very great.

Lock Haven, Clinton county: the greater part of the city was flooded on the 5th, the water in the Susquehanna River being within two feet as high as it was in the great flood of 1865; large quantities of saw-logs broke loose and were lost.

Williamsport, Lycoming county; great damage was done by the high water in the Susquehanna River on the 5th; the track of the Philadelphia and Reading Railroad was covered, preventing the running of trains. All streams were high, and heavy land slides have occurred near Montgomery and other points east of this city; bridges were washed away, and travel on public roads wholly interrupted; over a million feet of valuable lumber was washed away.

Easton, Northampton county; on the afternoon of the 5th the Lehigh River was sixteen feet high and in the Delaware River eighteen feet; several mills and factories were inundated, causing the suspension of business; railroad trains were delayed by washouts and land slides.

Mauch Chunk, Carbon county; the Lehigh River was higher on the 5th than at any time since the disastrous freshet of 1862; cellars were flooded and great damage done.

HIGH TIDES.

Salisbury, Wicomico county, Maryland: an unusually high tide occurred on the 8th; the water rose three feet above high-water mark, submerging portions of the city and sweeping away large quantities of lumber.

Westover, Somerset county, Maryland: a very high tide occurred on the 9th, which caused a heavy destruction of property in the lower part of Fairmount district; the water covered a number of farms to the depth of several feet.

New Bedford, Bristol county, Massachusetts: the heaviest tide for several years occurred on the 9th; wharves were overflowed, and Fish Island was completely covered.

High tides also occurred, as follows:
Eastport, Maine, 21st, 22d, 23d.
Newport, Rhode Island, 9th.
New London, Connecticut, 9th.
Sandy Hook, New Jersey, 9th.
Cedar Keys, Florida, 8th.
San Francisco, California, 20th.
Bird's Nest, Virginia, 9th.

LOW TIDES.

Indianola, Texas, 8th to 11th.

VERIFICATIONS.

INDICATIONS.

The detailed comparison of the tri-daily indications for districts east of the Rocky Mountains for January 1886, with the telegraphic reports for the succeeding thirty-two hours, shows the general average percentage of verifications to be 80.78 per cent. The percentages for the four elements are: Weather, 82.81; direction of the wind, 83.41; temperature, 77.41; barometer, 78.14 per cent. By geographical districts, they are: For New England, 85.95; middle Atlantic states, 86.80; south Atlantic states, 84.37; eastern Gulf states, 86.44; western Gulf states, 80.91; lower lake region, 78.84; upper lake region, 79.41; Ohio Valley and Tennessee, 81.04; upper Mississippi valley, 72.41; Missouri Valley, 71.11. There were eleven omissions to predict, out of 3,252, or 0.31 per cent. Of the 3,241 predictions that have been made, one hundred and twenty-eight, or 3.95 per cent., are considered to have entirely failed; one hundred and sixty-one, or 4.97 per cent., were one-fourth verified; four hundred and fifty-seven, or 14.10 per cent., were one-half verified; five hundred and eighty-three, or 17.99 per cent., were three-fourths verified; 1,912, or 58.99 per cent., were fully verified, so far as can be ascertained from the tri-daily reports.

The percentages of verifications of special predictions for certain localities are, as follows:

Baltimore, Maryland (twenty-seven days), 80.09; Washington City (twenty-seven days), 77.32; Erie, Pennsylvania, 75.81; Boston, Massachusetts, and New Haven, Connecticut, 86.47; Portland, Maine (thirty days), 77.50; Albany, New York, 74.60; Pittsburg, Pennsylvania, 80.24; Cincinnati, Ohio, 76.61; Louisville, Kentucky, 76.61; Sandusky, Ohio (thirty days), 75.83; Cairo, Illinois, 76.23; Saint Louis, Missouri, 69.35; Kansas, Indian Territory, and western Missouri, 66.94; Memphis, Tennessee, 73.39; Shreveport, Louisiana, 75.81; Iowa, 67.74; Tennessee, 79.10; northern Florida, 77.82; Lynchburg, Virginia (twenty-seven days), 65.74; Columbus, Ohio (twenty-six days), 70.19; Cleveland, Ohio (twenty-nine days), 78.45; Indianapolis, Indiana, 75.40; Oswego, New York, 76.61; Rochester, New York, 77.42; Buffalo, New York, 76.61; Milwaukee, Wisconsin, 76.61; Chicago, Illinois, 72.58; Detroit, Michigan, 70.96; Toledo, Ohio, 70.96; Omaha, Nebraska (twenty-six days), 74.04; Arkansas (twenty-six days), 87.99; Georgia (twenty-four days), 88.02; Saint Paul, Minnesota (twenty-three days), 65.22; Augusta, Atlanta, and Savannah, Georgia (three days), 70.83; New York City, 88.71; Philadelphia, Pennsylvania, 84.68; Colorado (thirty days), 77.08.

CAUTIONARY SIGNALS.

During January, 1886, one hundred and thirty-six cautionary signals were ordered. Of these, one hundred and fourteen, or 83.82 per cent., were justified by winds of twenty-five miles or more per hour at or within one hundred miles of the station. Fifty-four cautionary off-shore signals were ordered, of which number, forty-one, or 75.93 per cent., were fully justified, both as to direction and velocity; fifty-three, or 98.15 per cent., were justified as to direction; and forty-one, or 75.93 per cent., were justified as to velocity. One hundred and ninety signals of all kinds were ordered, one hundred and fifty-five, or 81.58 per cent., being fully justified. These do not include signals ordered at display stations where the velocity of the wind is only estimated. Of the above cautionary off-shore signals, forty-eight were changed from cautionary. Five signals were ordered late. In twenty-five cases, winds of twenty-five miles or more per hour were reported for which no signals were ordered.

COLD-WAVE SIGNALS.

During January, 1886, three hundred and twenty-six cold-wave signals were ordered, of which number, two hundred and sixty-eight, or 82.21 per cent., were justified.

RAILWAY WEATHER SIGNALS.

Prof. P. H. Mell, jr., director of the "Alabama Weather Service," in the report for January, 1886, states:

The verifications of predictions for the whole area was 94 per cent. for temperature, and 94 per cent. for weather.

The following roads comprise this system: Western of Alabama; South and North; Montgomery and Mobile; Mobile and Girard; Georgia Pacific; East Tennessee, Virginia and Georgia system in Alabama; Memphis and Charleston; Columbus Western; Alabama Great Southern; Atlanta and West Point of Georgia; Northeastern of Georgia; Atlanta and Charlotte Air Line; Western and Atlantic; Georgia; East Tennessee, Virginia and Georgia system in Georgia; and Montgomery and Eufaula.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroral displays occurred during January, as follows:

Saint Vincent, Minnesota: an aurora was observed at 9.20 p. m. of the 1st, extending from 125° to 200° azimuth, consisting of an irregular whitish light of about 15° altitude from which occasional streamers shot up to an altitude of 30°; the display lasted until after midnight.

Table of miscellaneous meteorological data for January, 1886—Signal Service observations.

Stations.	Elevation above sea-level.	Atmospheric pressure: Mean actual barometer.	Departure from normal.	Mean reduced barometer.	Extremes: Highest barometer.	Date.	Lowest barometer.	Date.	Monthly range of barometer.	Temperature of the air: Monthly mean.	Departure from normal.	Extremes: Max.	Date.	Mean max.	Min.	Date.	Mean min.	Monthly range.	Daily ranges: Greatest.	Date.	Least.	Date.	Mean rel. humidity.	Mean dew-point.	Precipitation.	Departure from normal.	Winds: Total movement.	Prevailing direction.	Maximum velocity: Miles p. h.	Direction.	Date.	No. of rainy days.	No. of cloudy days.	No. of fair days.	No. of clear days.
New England.																																			
Eastport	61	29.93	−.03	30.00	30.82	14	28.89	9	1.93	22.9	+3.3	46.1	5	30.5	−14.9	13	15.0	61.0	36.2	23	3.5	22	79.5	17.3	9.01	+5.70	8,700	nw.	60	ne.	9	20	15	10	6
Portland	99	29.90	−.05	30.01	30.83	14	28.81	9	2.02	21.3	−2.0	47.8	5	28.2	−12.4	13	14.8	60.2	33.1	23	3.9	30	81.6	16.4	4.65	+1.35	6,188	n.	40	ne.	9	17	12	13	6
Mount Washington	6,279	23.43	...	30.06	30.72	14	29.05	9	1.67	11.4	+6.4	37.5	29	20.3	−36.6	12	3.1	74.1	58.3	23	3.7	28	62.0	10.5	4.85	+0.61	23,889	nw.	122	nw.	23	20	6	15	10
Boston	125	29.88	−.08	30.02	30.82	14	28.73	9	2.09	25.9	−0.4	53.6	5	32.7	−10.1	12	18.7	63.7	30.6	23	3.8	3	73.8	18.4	7.08	+2.82	9,323	w.	64	ne.	9	18	11	11	9
Block Island	27	29.98	...	30.00	30.77	14	28.81	9	1.96	30.2	−0.2	52.1	5	35.4	0.9	12	24.6	51.2	22.6	23	2.1	22	82.0	25.4	7.04	+1.76	14,124	ne.	64	ne.	9	19	12	13	6
Narragansett Pier	...	...	...	...	...	...	...	...	...	28.5	...	56.0	5	36.0	−4.0	13	21.0	60.0	...	...	...	...	...	...	5.64	+0.16	...	...	...	...	...	17	...	...	...
New Haven	107	29.91	...	30.02	30.82	14	28.86	9	1.96	25.4	−2.1	52.4	5	33.2	−6.9	13	17.1	59.3	29.9	15	4.7	22	78.5	19.4	3.53	−0.69	7,809	ne.	44	ne.	9	15	11	13	7
New London	47	29.99	...	30.03	30.83	14	28.80	9	2.03	27.8	−0.7	49.9	5	34.2	−3.3	13	20.3	53.2	27.0	15	4.0	3	77.5	21.5	7.39	+3.18	5,655	n.	40	ne.	9	17	9	17	5
Mid. Atlantic States.																																			
Albany	83	29.99	−.07	30.08	30.90	14	28.94	9	1.96	20.4	−2.6	56.9	5	28.5	−9.8	13	13.3	66.7	31.1	6	6.7	28	78.7	14.8	3.66	+0.89	5,417	nw.	36	se.	4	13	10	10	5
New York City	164	29.86	−.11	30.04	30.84	14	28.80	9	2.03	28.5	−1.3	53.9	4	35.7	3.0	12	22.2	50.9	24.2	6	4.5	27	78.2	22.5	5.02	+1.35	9,317	nw.	44	ne.	9	12	10	12	9
Philadelphia	117	29.92	−.11	30.04	30.86	14	28.69	9	2.16	29.4	−2.0	58.1	5	35.9	3.9	12	23.0	54.2	22.6	23	3.8	27	73.8	21.8	3.69	+0.21	9,000	nw.	40	ne.	9	13	11	12	8
Atlantic City	13	30.02	−.12	30.02	30.78	14	28.77	9	2.01	29.7	−2.2	52.8	5	37.7	2.1	12	21.9	50.7	25.2	8	6.4	28	83.0	25.1	3.17	−0.83	8,123	nw.	53	e.	8	14	7	16	8
Barnegat City	22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Little Egg Harbor	27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sandy Hook	28	30.02	−.11	30.04	30.83	14	28.80	9	2.04	28.8	−1.8	52.1	5	34.2	4.1	12	23.3	48.0	21.4	23	3.5	29	78.2	22.8	4.47	+0.15	14,649	nw.	66	ne.	9	14	7	14	10
Cape Henlopen	...	...	...	...	...	...	...	...	...	32.7	−0.1	59.7	4	35.2	6.4	12	30.2	53.3	...	...	...	...	...	...	2.80	−1.01	...	...	...	...	...	13	...	...	...
Baltimore	45	30.03	−.11	30.07	30.86	14	29.00	9	1.86	29.1	−5.5	56.7	4	36.0	2.5	13	22.9	54.2	22.2	15	2.9	27	74.3	21.7	4.48	+1.31	4,789	n.	27	se.	4	16	11	14	6
Ocean City	...	...	...	...	...	...	...	...	...	32.8	...	54.6	5	39.1	5.0	12	26.6	49.6	...	...	...	...	...	...	2.63	−2.05	...	...	...	...	...	14	...	...	...
Washington City	106	29.97	−.10	30.07	30.85	14	28.96	9	1.89	28.9	−4.0	59.9	4	36.4	−1.2	14	22.4	61.1	29.0	14	4.0	27	81.5	23.7	5.01	+1.60	4,708	nw.	28	s.	4	15	9	17	5
Cape Henry	16	30.04	−.11	30.04	30.78	14	29.01	8	1.78	34.5	−6.1	60.0	4	41.6	10.7	10	28.7	49.3	37.2	9	3.4	17	80.6	28.9	2.99	−1.97	10,435	nw.	60	ne	8	9	5	20	6
Chincoteague	8	30.04	−.11	30.03	30.79	14	28.96	8	1.84	32.7	−1.4	54.9	4	39.8	7.3	12	26.7	47.6	31.9	9	2.8	28	77.8	26.3	4.03	−0.91	11,228	nw.	42	w.	9	15	6	18	7
Lynchburg	652	29.35	−.11	30.05	30.80	14	29.22	8	1.58	31.3	−5.4	65.0	4	40.2	−2.7	13	23.3	67.7	32.0	14	4.7	27	77.0	24.6	4.56	+0.10	3,182	ne.	17	se.	4	15	12	15	4
Norfolk	30	30.02	−.14	30.02	30.72	14	29.03	8	1.70	34.3	−6.5	63.2	4	42.1	9.4	11	28.6	53.8	35.8	9	4.0	28	79.9	28.4	2.93	−1.11	5,176	n.	38	w.	9	15	7	14	10
South Atlantic States.																																			
Charlotte	808	29.20	−.10	30.06	30.76	14	29.34	8	1.42	35.3	−6.0	63.0	4	44.1	−0.6	12	27.0	63.6	25.5	4	6.8	16	71.7	26.4	4.94	−1.56	4,642	ne.	27	e.	8	13	10	9	12
Fort Macon	11	30.04	−.13	30.02	30.69	14	29.26	8	1.44	39.7	−4.6	63.3	4	46.5	9.9	11	34.0	53.4	31.6	9	7.0	24	85.7	35.7	4.86	−1.19	12,599	ne.	62	sw.	9	14	9	12	10
Hatteras	12	30.03	−.13	30.02	30.68	14	29.16	8	1.52	39.8	−4.3	63.0	3	46.3	14.0	11	34.7	49.0	30.9	9	4.0	25	84.5	35.3	7.17	+0.54	10,913	n.	46	w.	9	14	8	13	10
Kitty Hawk	9	30.04	−.14	30.03	30.75	14	29.06	8	1.69	37.4	−5.0	61.9	4	43.5	10.5	11	31.8	51.4	30.7	9	4.5	25	81.1	31.9	6.23	+0.17	11,943	n.	48	e.	8	16	9	17	5
New River Inlet	...	...	...	...	...	...	...	...	...	39.5	...	65.5	3	47.9	5.0	12	31.1	60.5	...	...	...	...	...	...	1.70	...	...	...	...	...	...	9	...	...	...
Smithville	34	30.01	−.14	30.02	30.72	14	29.28	8	1.44	40.0	−6.9	63.0	4	47.1	7.8	12	32.6	55.2	26.4	15	7.1	3	78.0	33.5	2.14	−1.82	6,669	ne.	44	w.	9	11	12	12	7
Charleston	52	30.02	−.12	30.04	30.67	14	29.39	8	1.28	42.8	−6.6	70.3	19	50.7	10.5	11	35.0	59.8	24.1	26	5.9	29	77.1	35.5	5.64	+1.52	5,975	w.	29	w.	9	12	3	19	9
Augusta	183	29.90	−.12	30.06	30.71	14	29.38	8	1.34	40.2	−7.1	68.3	2	51.0	6.0	12	30.5	62.3	33.8	20	8.7	28	76.4	32.5	3.69	−1.00	4,210	w.	25	w.	8	10	13	9	9
Savannah	87	29.99	−.11	30.05	30.65	14	29.41	8	1.24	45.9	−5.7	70.0	19	54.5	12.0	12	37.8	58.0	25.0	18	6.0	28	77.8	38.8	2.92	−0.72	6,660	w.	32	w.	8	9	18	13	10
Jacksonville	43	30.03	−.11	30.04	30.53	12	29.49	8	1.04	50.7	−5.2	72.9	2	59.4	15.3	12	43.2	57.6	26.6	18	5.4	28	78.8	43.7	2.81	−0.85	5,865	w.	37	sw.	8	10	15	11	6
Florida Peninsula.																																			
Cedar Keys	22	30.03	−.12	30.01	30.46	12	29.58	8	0.88	49.2	−8.7	73.0	1	57.2	15.5	10	42.9	57.5	29.6	14	7.6	3	86.9	45.4	1.86	−3.35	6,892	w.	32	w.	8	10	11	13	7
Key West	20	30.05	−.06	30.02	30.33	12	29.75	25	0.58	63.8	−6.5	79.2	3	68.9	40.8	12	59.6	38.4	15.5	8	3.9	10	83.0	58.3	1.45	−1.01	8,639	ne.	30	nw.	25	8	10	18	3
Sanford	25	30.06	...	30.05	30.46	12	29.65	8	0.80	53.1	−5.8	77.0	24	62.4	21.0	10	45.2	56.0	28.8	18	5.7	27	76.6	45.3	4.77	+2.97	5,118	w.	26	w.	9	11	11	13	7
Eastern Gulf States.																																			
Atlanta	1,129	28.87	−.12	30.07	30.63	14	29.48	8	1.16	36.1	−7.4	59.9	3	44.2	−2.4	11	28.2	62.3	29.0	22	6.8	29	74.1	28.1	7.33	−0.01	8,857	nw.	36	se.	8	13	13	9	9
Pensacola	39	30.05	−.11	30.04	30.57	12	29.54	8	1.02	46.3	−7.2	67.1	3	53.3	14.9	9	39.0	52.2	38.0	8	5.8	26	76.4	38.8	5.30	−0.29	5,812	n.	28	w.	4	14	7	17	7
Mobile	35	30.06	−.09	30.06	30.60	12	29.58	8	1.02	44.1	−6.3	68.3	21	51.7	11.0	9	35.7	57.3	38.8	8	8.3	26	79.4	37.4	6.12	+0.71	6,820	nw.	32	se.	3	13	12	13	6
Montgomery	219	29.86	−.09	30.07	30.56	12	29.50	8	1.12	41.8	−6.0	66.1	20	49.5	5.4	9	33.8	60.7	31.4	8	5.3	28	75.8	34.3	6.69	+1.71	5,447	w.	30	w.	8	11	13	12	6
Vicksburg	209	29.90	−.07	30.10	30.65	11	29.68	7	0.96	38.0	−9.6	72.3	2	46.9	3.1	9	30.4	69.2	39.3	8	4.9	24	78.7	31.6	7.84	+2.19	3,805	nw.	27	w.	4	11	13	12	6
New Orleans	52	30.04	−.06	30.06	30.57	12	29.67	7	0.90	45.5	−8.5	71.9	2	53.0	15.3	9	38.7	56.6	35.8	8	6.5	25	79.8	39.0	7.53	+1.81	6,205	nw.	31	e.	15	9	7	17	7
Western Gulf States.																																			
Shreveport *	227	29.88	−.06	30.10	30.62	11	29.62	2	1.03	38.1	−7.5	69.9	26	48.1	1.3	8	29.1	68.6	35.4	7	6.0	16	67.8	28.4	3.87	−1.41	...	nw.	...	...	...	10	11	10	10
Fort Smith	470	29.62	−.09	30.12	30.72	11	29.62	2	1.11	27.1	−5.0	64.0	2	35.5	−6.9	8	19.8	70.9	29.9	7	4.3	14	75.1	20.0	2.52	+0.50	5,497	e.	25	nw.	4	9	16	10	5
Little Rock	299	29.78	−.07	30.07	30.67	11	29.62	2	1.05	29.1	−12.5	61.0	2	36.1	−4.8	9	23.6	65.8	25.6	20	3.1	15	83.2	24.4	3.97	−0.73	4,630	nw.	25	n.	22	13	14	11	6
Galveston	40	30.09	−.02	30.09	30.64	9	29.64	2	1.00	47.3	−5.2	68.7	2	54.9	11.0	8	39.8	57.7	35.0	7	5.4	2	85.7	43.0	3.45	−0.66	9,052	e.	42	n.	7	10	8	14	9
Indianola	26	30.08	−.05	30.07	30.67	9	29.63	2	1.04	46.3	−6.1	73.3	2	54.4	11.6	8	38.3	61.7	40.9	7	4.8	11	83.3	41.0	2.51	+0.21	12,203	n.	60	n.	8	9	8	11	12
Palestine	533	29.57	−.08	30.12	30.64	9	29.67	2	0.97	39.3	−2.7	75.1	26	50.0	0.0	8	29.8	75.1	44.0	7	6.2	16	73.8	30.7	3.65	−0.97	7,945	nw.	40	nw.	26	11	8	9	14
San Antonio	781	29.28	...	30.08	30.56	9	29.66	2	0.90	44.2	−7.6	81.4	26	56.4	5.8	8	32.1	75.6	45.0	7	6.6	17	65.0	31.2	0.75	−0.59	6,955	n.	31	n.	7	4	8	10	13
Rio Grande Valley.																																			
Brownsville	59	30.04	−.02	30.05	30.60	8	29.62	2	0.97	53.3	−4.4	78.9	22	65.0	22.5	9	43.6	56.4	33.1	16	4.7	12	79.5	45.8	1.81	−0.37	6,061	n.	36	n.	8	6	8	10	13
Rio Grande City	230	29.91	−.02	30.07	30.61	8	29.60	2	1.02	52.3	−4.4	83.3	26	62.4	21.0	9	42.8	62.3	38.3	30	4.0	13	65.2	39.1	1.07	−0.14	3,518	n.	19	n.	7	4	9	8	14
Ohio Val. & Tenn.																																			
Chattanooga	783	29.26	−.09	30.10	30.64	14	29.50	8	1.14	33.2	−8.6	56.0	3	41.4	−6.9	11	25.8	62.9	27.8	14	4.1	3	83.7	28.4	6.78	−1.23	4,819	ne.	26	w.	8	16	17	7	7
Knoxville	980	29.03	−.11	30.08	30.64	14	29.38	8	1.26	32.6	−4.8	60.8	20	41.5	−6.0	11	25.0	66.8	31.9	14	4.4	16	81.0	27.1	6.12	+0.06	4,437	w.	32	w.	8	21	17	8	6
Memphis	321	29.73	−.10	30.06	30.62	11	29.62	3	0.99	29.6	−10.8	60.5	2	36.9	−8.0	9	23.3	68.5	35.0	8	5.0	28	80.3	24.0	4.55	−1.40	4,928	nw.	30	nw.	11	14	14	13	4
Nashville	549	29.48	−.10	30.06	30.62	12	29.43	8	1.19	29.0	−9.5	58.9	3	37.4	−9.0	11	21.4	67.9	30.7	14	2.9	28	81.4	24.0	5.18	−0.06	5,329	w.	30	nw.	21	14	20	7	4
Louisville	551	29.48	−.08	30.07	30.61	14	29.44	8	1.18	31.0	−3.4	61.9	3	38.8	−7.5	11	23.4	69.4	37.0	22	4.7	28	84.2	26.8	4.64	+0.41	6,745	sw.	36	sw.	9	19	14	12	5
Greencastle	897	29.07	...	30.06	30.55	14	29.51	3	1.04	21.9	...	54.0	3	30.3	−15.2	10	14.0	69.2	37.3	22	4.7	27	83.5	17.7	4.65	...	5,682	se.	24	w.	9	18	16	12	3
Indianapolis	766	29.21	−.09	30.05	30.58	14	29.49	3	1.09	22.2	−6.6	55.3	3	30.0	−15.0	10	14.6	70.3	34.6	22	1.9	27	85.8	18.5	4.02	+1.19	5,296	w.	24	w.	22	17	18	11	2
Cincinnati	628	29.38	−.09	30.07	30.63	14	29.41	8	1.23	25.4	−8.0	56.6	3	33.4	−12.4	11	18.4	69.0	28.1	22	4.1	28	78.0	19.3	2.83	−0.77	6,055	nw.	31	w.	9	21	18	10	3
Columbus	805	29.16	−.10	30.06	30.68	14	29.33	8	1.36	23.8	−4.2	56.0	3	31.0	−10.8	11	15.9	66.8	26.8	22	6.6	20	78.9	18.2	4.36	+1.18	6,042	w.	34	w.	9	18	18	10	3
Pittsburg	766	29.19	−.10	30.04	30.71	14	29.20	9	1.51	27.4	−2.9	60.6	4	35.4	−4.8	12	19.7	65.4	30.3	15	6.5	3	82.5	22.6	3.21	+0.12	5,552	ne.	35	sw.	9	17	17	13	1
Lower lake region.																																			
Buffalo	690	29.25	−.07	30.03	30.75	14	29.20	9	1.55	22.1	−2.2	57.6	4	29.1	−1.4	12	16.5	59.0	29.9	25	3.6	29	86.0	18.5	4.22	+1.53	9,181	w.	48	sw.	17	24	22	8	1
Oswego	335	29.66	−.07	30.04	30.77	14	29.05	9	1.71	19.1	−6.4	52.0	4	26.4	−17.2	12	11.9	69.2	32.1	23	5.5	28	87.1	15.9	3.29	+0.20	9,926	se.	39	w.	23	18	27	2	2
Rochester	621	29.34	−.06	30.04	30.72	14	29.14	9	1.58	20.9	−2.9	57.0	4	28.9	−3.0	12	15.0	60.0	36.5	25	5.3	29	89.7	18.3	2.58	−0.77	9,724	w.	60	w.	22	21	25	6	0
Erie	681	29.26	−.09	30.02	30.70	14	29.24	9	1.46	23.1	−4.1	58.8	4	33.8	−4.0	13	16.6	62.8	30.0	14	6.3	28	84.6	19.1	4.80	+1.35	9,303	s.	43	nw.	10	23	22	5	4
Cleveland	690	29.26	−.10	30.03	30.66	14	29.30	9	1.36	23.1	−2.9	53.6	4	30.6	−9.0	11	16.5	62.6	25.9	21	4.3	28	83.0	18.7	3.35	+0.90	8,407	w.	34	se.	20	17	16	12	3
Sandusky	639	29.34	−.08	30.05	30.66	14	29.39	9	1.27	22.7	−4.3	54.0	3	29.8	−12.0	11	15.3	66.0	26.9	22	3.5	28	79.4	17.3	2.28	+0.07	10,516	sw.	50	nw.	9	19	19	8	4
Toledo	651	29.32	−.07	30.05	30.64	14	29.43	9	1.22	20.7	−6.2	53.2	3	27.8	−11.4	11	13.2	64.6	29.0	22	4.6	28	78.4	15.0	2.79	+0.63	5,247	w.	37	w.	16	21	17	11	3
Detroit	661	29.29	−.08	30.04	30.64	14	29.42	9	1.22	24.7	+0.3	55.1	4	31.1	−3.5	11	17.2	58.6	32.6	22	5.0	28	80.4	19.6	1.92	−0.20	7,551	w.	32	nw.	22	20	17	12	2
Upper lake region.																																			
Alpena	609	29.34	−.02	30.05	30.50	23	29.52	4	0.99	15.3	−2.5	45.0	4	22.1	−10.9	23	9.5	55.9	28.1	5	4.3	3	83.0	11.2	5.16	+3.04	7,625	w.	27	e.	18	23	18	12	1
Escanaba	608	29.37	+.01	30.09	30.54	23	29.52	4	1.02	12.8	−1.2	34.8	1	19.3	−21.7	24	6.1	56.5	35.4	24	1.8	2	80.0	7.8	4.80	+3.52	7,127	n.	30	n.	5	22	16	15	0
Grand Haven	620	29.32	−.07	30.02	30.47	23	29.46	3	1.01	20.2	−4.6	50.3	4	25.4	−0.6	22	14.9	50.9	28.7	22	3.5	11	81.4	15.5	2.62	+0.24	8,341	e.	40	nw.	22	23	22	8	1
Mackinaw City	605	29.34	−.01	30.05	30.50	23	29.50	4	1.00	15.0	+1.0	41.1	4	21.9	−16.3	23	6.6	57.4	27.1	22	3.9	2	73.0	7.8	2.25	−3.63	8,156	ne.	36	ne.	8	20	14	13	4
Marquette	672	29.30	+.01	30.08	30.47	23	29.64	4	0.84	13.8	−2.7	35.4	4	22.3	−17.8	21	8.2	53.2	33.8	22	5.2	3	88.8	11.1	3.14	+1.87	8,328	w.	36	s.	14	26	24	5	2
Port Huron	633	29.31	−.07	30.03	30.62	14	29.40	9	1.22	19.9	−1.2	49.0	4	25.2	−5.2	23	13.6	54.2	27.5	25	2.6	27	84.6	16.1	2.19	+0.18	7,287	w.	36	ne.	9	21	21	9	1
Chicago	661	29.31	−.06	30.05	30.54	23	29.38	3	1.17	21.4	−3.3	48.3	1	30.8	−14.4	23	14.0	62.7	36.6	22	4.5	27	83.7	17.1	3.56	+1.49	7,498	w.	28	w.	16	19	12	15	4
Milwaukee	697	29.27	−.04	30.07	30.58	23	29.43	3	1.15	15.8	−3.9	45.1	2	22.3	−21.8	23	8.3	66.9	37.3	22	2.8	3	88.4	13.0	5.02	+3.12	9,285	nw.	39	n.	5	25	15	15	1
Duluth	672	29.38	+.06	30.18	30.52	23	29.84	4	0.68	5.7	−4.9	31.2	1	14.5	−31.7	23	−2.4	62.9	33.7	11	6.1	7	78.1	0.1	2.26	+1.94	6,425	nw.	40	nw.	9	21	10	18	3
Extreme northwest.																																			
Moorhead	923	20.16	+.06	30.27	30.67	10	29.79	20	0.88	−6.9	−4.6	32.0	13	3.0	−39.8	9	−17.2	71.9	41.0	27	5.5	15	91.9	−8.7	0.94	+0.20	8,217	n.	38	s.	13	10	8	15	8
Saint Vincent	804	29.34	+.11	30.33	30.71	8	29.73	13	0.97	−11.2	−3.8	26.0	13	−1.1	−40.7	9	−21.2	66.7	48.1	27	6.8	15	83.9	−15.1	0.49	+0.16	6,634	nw.	33	s.	27	12	4	15	12
Bismarck	1,694	28.32	+.12	30.32	30.74	7	29.75	29	0.99	−4.0	−9.3	39.4	28	7.5	−36.9	22	−14.3	76.3	42.0	28	11.6	15	75.1	−11.2	0.62	+0.09	3,997	n.	27	nw.	28	11	5	17	9
Fort Buford	1,930	28.08	+.11	30.32	30.68	7	29.78	27	1.10	−4.2	−10.1	44.1	27	7.2	−48.2	22	−15.1	92.3	48.9	27	8.3	18	89.0	−6.9	0.41	−0.32	6,061	nw.	40	nw.	27	10	7	21	3
Fort Totten	1,490	28.52	...	30.29	30.68	8	29.75	13	0.93	−10.5	...	32.0	13	−1.0	−43.0	9	−21.2	75.0	36.7	27	9.0	5	71.4	−16.0	0.89	...	9,281	nw.	43	s.	27	12	5	14	12
Fort Yates	...	...	...	...	...	...	...	...	...	−1.8	...	34.3	13	7.3	−32.6	8	−10.9	66.9	...	...	...	...	...	...	1.12	+0.52	...	...	...	...	...	9	...	...	...

Table of miscellaneous meteorological data for January, 1886—Signal Service observations—Continued.

Stations.	Elevation above sea-level.	Atmospheric pressure (in inches and hundredths).								Temperature of the air (in degrees Fahrenheit).													Mean rel. humidity.	Mean dew-point.	Precipitation.	Departure from normal.	Winds.					No. of rainy days.	No. of cloudy days.	No. of fair days.	No. of clear days.
		Mean actual barometer.	Departure from normal.	Mean reduced barometer.	Extremes. Highest barometer.	Date.	Lowest barometer.	Date.	Monthly range of barometer.	Monthly mean.	Departure from normal.	Extremes. Max.	Date.	Mean max.	Min.	Date.	Mean min.	Monthly range.	Daily ranges. Greatest.	Date.	Least.	Date.					Total movement.	Prevailing direction.	Maximum velocity. Miles p. hr.	Direction.	Date.				
Upper Miss. Valley.																																			
Saint Paul	831	29.20	+.04	30.17	30.57	11	29.68	4	0.89	4.1	−8.9	30.0	1	12.3	−33.9	23	−4.8	63.9	34.3	22	7.6	3	85.0	0.3	1.76	+0.78	4,633	nw.	24	nw.	4	18	9	18	14
La Crosse	725	29.29	.0[illegible]	30.11	30.57	23	29.49	4	1.08	12.6	−3.0	36.7	15	20.3	−25.6	10	5.0	62.3	34.2	22	3.7	1	75.5	6.2	3.44	+2.30	5,519	n.	24	n.	3	22	12	13	6
Davenport	615	29.41	−.05	30.11	30.59	23	29.46	3	1.13	13.3	−8.1	49.5	3	21.0	−21.4	10	6.3	70.9	30.1	16	4.1	15	78.2	7.8	2.22	+0.52	6,805	nw.	20	nw.	9	17	13	13	5
Des Moines	849	29.20	−.01	30.16	30.65	11	29.51	4	1.14	10.9	−8.0	36.6	1	18.3	−24.0	9	3.5	60.6	28.7	12	4.1	1	77.7	5.3	3.47	+2.45	4,557	n.	20	ne.	3	19	15	11	5
Dubuque	665	29.36	...	30.11	30.55	11	29.47	3	1.0[illegible]	12.7	−5.9	37.8	2	19.0	−23.1	10	5.3	60.9	29.0	22	4.0	15	78.9	7.4	3.17	+1.71	3,[illegible]56	nw.	16	nw.	8	21	10	15	6
Keokuk	618	29.11	−.05	30.10	30.59	11	29.51	4	1.08	14.6	−9.5	52.3	1	22.9	−18.7	9	7.0	71.0	31.2	1[illegible]	5.2	28	86.6	11.3	2.08	+0.42	6,442	nw.	24	nw.	8	14	13	12	6
Cairo	359	29.71	−.0[illegible]	30.10	30.65	11	29.60	3	1.04	25.4	−9.7	57.2	2	32.4	−9.0	9	17.4	66.2	36.6	8	3.7	28	78.8	19.3	3.82	−0.37	6,499	w.	33	sw.	3	16	13	11	7
Springfield	644	29.37	−.0[illegible]	30.07	30.55	11	29.48	3	1.06	22.7	−3.9	58.0	3	33.6	−12.9	9	13.5	70.9	32.2	8	8.2	27	74.1	15.7	2.19	+0.14	7,895	nw.	29	n.	9	11	11	15	5
Saint Louis	571	29.47	−.08	30.10	30.[illegible]2	11	29.58	4	1.04	21.8	−6.7	60.0	2	35.0	−8.2	9	16.2	68.2	37.9	22	5.2	28	76.0	18.0	3.11	+0.94	9,057	nw.	44	nw.	8	13	10	13	8
Missouri Valley.																																			
Lamar	1,028	29.01	...	30.14	30.71	11	29.63	4	1.08	19.3	...	62.0	2	28.7	−16.0	9	10.2	78.0	34.1	22	3.0	4	83.5	15.0	2.91	...	8,437	nw.	33	n.	22	14	15	7	9
Leavenworth	842	29.24	−.02	30.18	30.74	11	29.58	3	1.16	14.4	−11.2	45.5	1	23.0	−20.5	9	5.8	66.0	36.7	7	4.2	4	76.5	8.4	1.60	+0.27	5,455	nw.	24	nw.	8	14	15	7	9
Omaha	1,113	28.97	+.03	30.21	30.69	11	29.62	30	1.07	7.3	−13.1	41.8	30	17.0	−24.1	9	−0.4	65.9	33.5	7	7.1	2	82.9	3.2	1.15	+0.60	8,749	n.	3[illegible]	n.	4	15	7	16	8
Valentine	2,603	27.35	...	30.21	30.66	7	29.72	24	0.93	7.1	...	56.6	24	21.0	−30.5	8	−4.7	87.1	5[illegible].5	27	8.5	20	72.3	−0.7	0.19	...	9,172	n.	66	nw.	7	5	7	18	6
Fort Sully	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Huron	1,307	28.74	+.06	30.29	30.72	11	29.76	29	0.96	0.3	−8.0	42.3	13	11.4	−32.5	9	−11.1	74.8	47.0	12	10.5	17	71.6	−7.0	0.48	+0.34	6,668	nw.	34	nw.	7	13	5	18	8
Yankton	1,228	28.83	+.05	30.25	30.69	11	29.69	30	1.00	5.0	−9.8	42.1	13	14.5	−27.5	9	−4.8	69.6	40.2	12	8.4	8	84.5	1.3	0.43	−0.08	6,656	nw.	39	nw.	8	9	8	15	8
Northern slope.																																			
Fort Assinaboine	2,720	27.22	+.06	30.28	30.91	6	29.79	27	1.12	0.4	−10.4	46.1	29	9.0	−49.3	22	−11.7	95.4	42.9	27	7.2	25	60.3	−10.2	1.50	+0.31	7,005	sw.	45	sw.	27	9	9	15	7
Fort Benton	2,681	27.29	...	30.27	30.93	6	29.79	27	1.14	3.5	−9.7	49.1	4	16.7	−51.0	22	−6.4	†	43.1	27	8.6	29	78.6	−2.0	0.67	−0.15	1,568	ne.	20	sw.	29	9	14	12	5
Fort Maginnis	4,340	25.44	...	30.21	30.57	7	29.77	23	0.80	9.4	−8.1	49.7	12	20.9	−33.2	21	−2.1	82.9	50.4	6	4.3	9	56.7	−3.5	2.28	+0.90	9,117	w.	50	e.	20	14	13	13	5
Fort Shaw ‡	3,550	26.33	...	30.20	30.67	6	29.69	23	0.98	7.5	−9.8	50.9	29	20.4	−41.0	22	4.5	91.9	57.5	2[illegible]	8.6	21	50.8	−14.3	0.85	−0.46	6,712	w.	44	w.	2	12	3	17	11
Helena	4,044	25.78	−.05	30.16	30.70	7	29.68	24	1.02	10.1	−6.1	49.3	29	21.2	−30.2	7	1.4	79.5	55.0	6	7.7	30	71.4	2.5	0.82	−1.09	4,547	n.	42	sw.	20	11	9	18	4
Poplar River	2,030	28.00	...	30.36	30.96	7	29.80	27	1.16	−8.0	...	41.0	27	4.1	−49.1	19	−19.0	90.1	44.0	27	10.9	24	87.7	−11.1	0.40	−0.13	3,931	w.	33	w.	27	10	7	16	8
Deadwood	4,600	25.28	+.03	30.23	30.53	7	29.71	21	0.82	14.7	−7.1	48.7	27	24.8	−23.7	7	5.0	72.4	55.3	21	4.1	18	77.8	8.7	1.28	+0.27	2,537	ne.	33	sw.	21	14	3	14	14
Cheyenne	6,105	23.85	−.04	30.11	30.48	28	29.75	19	0.64	21.6	−3.3	51.4	24	32.1	−27.0	7	8.8	78.4	43.0	[illegible]	11.1	31	74.7	14.4	0.55	+0.28	10,213	nw.	52	nw.	21	10	3	20	8
North Platte	2,841	27.10	+.01	30.20	30.54	7	29.83	21	0.71	15.9	−3.9	52.0	25	26.1	−21.2	8	6.4	73.2	45.6	21	7.8	15	79.0	10.4	0.09	−0.47	5,748	nw.	32	nw.	7	6	2	19	10
Fort Laramie	...	...	...	...	...	2	...	...	...	17.9	...	52.2	24	30.2	−33.0	19	5.6	85.2	...	...	...	...	...	...	0.24	...	...	...	...	...	...	4	...	...	...
Middle slope.																																			
Denver	5,294	24.65	−.02	30.16	30.43	11	29.78	19	0.65	20.8	−6.9	62.8	24	35.0	−18.9	8	8.6	81.7	56.7	19	7.3	16	66.7	10.5	0.62	−0.02	5,796	s.	42	w.	30	[illegible]	2	15	14
Pike's Peak	14,134	17.49	...	30.18	30.46	4	29.81	18	0.65	2.0	−0.6	18.9	25	8.2	−29.8	7	−4.0	48.7	2[illegible].5	2	4.8	21	90.7	−0.2	4.04	+2.54	19,003	w.	88	w.	22	13	5	13	13
West Las Animas	3,899	26.01	−.03	30.12	30.40	7	29.77	18	0.63	17.9	−2.2	52.1	24	29.6	−21.5	8	6.9	73.6	41.0	23	5.2	17	86.7	14.1	0.68	+0.47	5,292	w.	34	n.	7	11	7	10	8
Concordia	1,384	28.64	...	30.18	30.66	11	29.72	30	0.94	10.5	...	42.5	30	20.0	−21.7	8	2.2	64.2	40.7	7	4.9	3	90.1	8.0	0.62	...	7,880	n.	38	n.	7	7	9	12	10
Dodge City	2,517	27.43	−.01	30.14	30.55	11	29.78	6	0.77	10.5	−9.4	44.0	30	25.1	−16.2	8	8.7	60.2	33.0	12	7.6	17	84.2	12.5	1.82	+1.51	8,650	nw.	44	n.	7	9	9	13	9
Fort Reno	...	...	...	...	...	...	...	...	...	21.6	...	57.4	30	35.7	§−20.0	7	§7.5	77.4	...	...	...	...	...	...	1.08	+0.97	...	...	...	...	...	15	...	...	...
Fort Supply	...	...	...	...	...	...	...	...	...	24.0	...	58.2	30	35.8	−13.0	8	12.3	71.2	...	...	...	...	...	...	1.39	+1.10	...	...	...	...	...	12	...	...	...
Fort Elliott	2,650	27.25	+.01	30.16	30.50	10	29.79	6	0.71	25.2	−5.8	60.0	20	39.1	−9.6	8	14.3	69.6	40.4	24	8.2	16	78.8	18.7	0.02	+0.31	10,037	nw.	59	n.	22	6	5	9	17
Southern slope.																																			
Fort Sill	1,200	28.87	.00	30.17	30.66	11	29.77	2	0.89	27.2	−8.5	68.0	20	40.4	−5.0	8	17.8	73.0	43.9	7	8.2	1	71.0	18.5	0.42	−0.76	8,435	n.	49	n.	22	4	7	11	13
Abilene	1,745	28.27	...	30.15	30.59	9	29.80	2	0.79	34.9	...	72.4	20	49.2	−2.8	8	24.1	75.2	52.0	24	9.1	16	70.1	24.7	0.11	...	8,077	n.	44	nw.	26	6	5	11	15
Fort Davis	4,928	25.15	−.04	30.09	30.31	4	29.73	1	0.58	42.8	−0.4	73.3	25	50.4	−3.2	8	30.0	76.5	40.9	8	9.2	12	46.8	20.8	0.22	−0.41	6,485	sw.	32	sw.	6	4	1	5	25
Fort Stanton	...	2[illegible].88	...	...	...	...	...	...	0.60	33.4	...	61.1	24	45.7	−4.4	3	21.7	65.5	41.8	5	9.7	17	64.9	21.0	0.30	...	7,756	nw.	49	nw.	20	3	3	11	17
Southern plateau.																																			
El Paso	3,764	26.28	−.01	30.13	30.42	8	29.70	1	0.72	43.5	−1.0	71.1	25	55.4	11.0	8	31.2	60.1	39.9	24	10.5	2	52.2	25.2	0.31	−0.31	3,623	nw.	28	w.	20	2	4	9	18
Lava	...	...	...	...	...	...	...	...	...	43.4	...	66.6	24	51.6	0.8	3	25.3	58.6	...	...	...	...	...	...	0.13	...	...	...	...	...	...	4	...	...	...
Santa Fé	7,026	23.18	−.04	30.18	30.42	29	29.77	1	0.65	25.2	−2.6	48.0	31	34.2	−6.5	8	15.9	54.5	31.0	5	6.0	17	73.6	17.7	0.70	+0.20	5,569	n.	26	n.	3	10	3	10	18
Fort Apache	5,050	25.04	+.01	30.13	30.35	4	29.73	1	0.62	34.8	+1.2	63.7	31	48.4	−9.5	3	23.7	73.2	43.9	3	8.6	19	73.9	20.7	3.90	+2.72	3,518	ne.	30	sw.	18	12	10	5	16
Fort Bowie	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4.24	...	...	...	...	...	...	11	...	...	...
Fort Grant	4,856	25.22	...	30.09	30.26	20	29.68	1	0.5[illegible]	41.0	−1.4	65.1	4	51.6	12.1	3	33.2	53.0	45.3	8	9.9	11	62.8	28.0	2.40	+1.74	4,974	n.	37	se.	12	12	9	5	17
Fort McDowell	...	...	...	...	...	...	...	...	...	49.6	...	77.0	20	63.5	12.0	3	35.7	65.0	...	...	...	...	...	...	3.35	...	...	...	...	...	...	10	...	...	...
Fort Thomas	2,710	27.29	...	30.10	30.34	4	29.69	1	0.65	41.2	+1.2	68.0	30	54.6	12.4	3	29.0	55.6	42.7	30	14.1	18	75.4	32.4	2.10	+1.75	2,309	s.	18	w.	14	11	9	8	14
Fort Verde	...	...	...	...	...	...	...	...	...	42.1	+2.5	67.5	31	55.0	12.5	9	39.3	55.0	...	...	...	...	...	...	1.90	+1.20	...	...	...	...	...	8	...	...	...
Maricopa	...	...	...	...	...	...	...	...	...	51.5	...	74.1	31	64.4	19.5	3	38.7	54.6	...	...	...	...	...	...	1.32	...	...	...	...	...	...	9	...	...	...
Phœnix	...	...	...	...	...	...	...	...	...	50.5	+1.5	82.3	30	67.7	11.5	4	33.2	70.8	...	...	...	...	...	...	1.32	+0.82	...	...	...	...	...	10	...	...	...
Prescott	5,389	24.71	−.02	30.12	30.37	29	29.72	17	0.65	35.4	+2.8	60.0	30	46.4	8.0	2	20.4	52.0	31.9	8	5.8	17	79.2	28.8	5.99	+5.01	5,238	sw.	44	sw.	19	11	8	8	15
San Carlos	...	...	...	...	...	...	...	...	...	44.4	...	70.0	31	54.5	17.3	3	34.4	52.7	...	...	...	...	...	...	2.88	+1.91	...	...	...	...	...	9	...	...	...
Wickenburg	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Willcox	...	...	...	...	...	...	...	...	...	41.8	...	71.0	30	55.6	7.0	5	28.0	64.0	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...
Yuma	141	29.92	−.02	30.04	30.40	3	29.68	17	0.71	55.0	+1.3	79.6	31	64.9	30.4	6	45.8	49.2	30.5	31	7.0	13	61.7	39.6	1.06	+0.68	4,647	n.	30	s.	19	5	7	9	15
Middle plateau.																																			
Fort Bidwell	...	25.35	...	...	...	...	...	...	1.04	30.1	...	51.6	31	38.1	−3.8	16	21.7	55.4	26.7	18	6.8	27	83.6	25.8	5.78	...	3,736	s.	28	s.	20	20	13	10	8
Winnemucca	4,358	25.02	−.04	30.16	30.55	7	29.50	19	1.04	32.3	+2.9	57.0	29	42.2	2.4	16	21.4	54.6	30.7	9	9.8	15	57.9	18.5	0.71	−0.42	7,198	sw.	41	sw.	21	11	7	12	12
Salt Lake City	4,348	25.64	−.06	30.20	30.60	8	29.61	19	0.99	29.1	+0.5	52.8	[illegible]5	37.3	−2.0	8	20.2	54.8	25.0	8	9.1	21	72.2	21.1	1.91	+0.57	3,520	se.	32	se.	21	16	13	10	8
Montrose	5,825	24.27	...	30.27	30.56	29	29.74	17	0.82	23.4	...	48.0	21	34.8	−11.3	8	14.4	59.3	35.4	10	7.9	25	72.5	15.6	0.79	...	4,060	se.	40	sw.	19	12	14	7	10
Fort Bridger*	...	23.41	...	...	...	...	...	...	0.61	21.0	...	46.6	24	30.8	−10.8	18	10.8	57.4	31.3	5	7.3	31	75.2	14.2	0.50	...	9,350	sw.	40	sw.	20	11	8	12	11
Northern plateau.																																			
Boisé City	2,750	27.22	...	30.15	30.63	7	29.47	19	1.16	28.2	−0.2	53.3	24	36.8	−1.3	18	19.0	54.6	31.6	20	8.1	30	83.1	23.5	2.96	+0.83	2,907	se.	26	se.	20	18	10	13	8
Cœur d'Alene	...	...	...	...	...	...	...	...	...	21.9	...	45.0	29	28.8	−12.0	7	15.0	57.0	...	...	...	...	...	...	4.18	+1.18	...	...	...	...	...	15	...	...	...
Lewiston	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ashland	...	...	...	...	...	...	...	...	...	38.8	...	58.0	31	46.7	17.0	16	30.9	41.0	...	...	...	...	...	...	4.64	...	...	...	...	...	...	18	...	...	...
Fort Klamath	...	...	...	...	...	...	...	...	...	27.1	...	51.1	31	36.5	−15.0	16	17.8	66.0	...	...	...	...	...	...	7.30	...	...	...	...	...	...	19	...	...	...
Lake View	...	...	...	...	...	...	...	...	...	32.0	...	57.0	10	41.7	−2.5	16	22.4	59.5	...	...	...	...	...	...	3.15	...	...	...	...	...	...	17	...	...	...
Linkville	...	...	...	...	...	...	...	...	...	29.8	...	54.0	30	37.9	−4.0	18	21.7	58.0	...	...	...	...	...	...	5.31	...	...	...	...	...	...	10	...	...	...
Fort Spokane ‖	...	...	...	...	...	...	...	...	...	19.4	...	43.4	29	26.4	−12.7	20	12.4	50.1	...	...	...	...	...	...	1.80	...	...	...	...	...	...	18	...	...	...
Spokane Falls	1,909	27.50	−.18	30.05	30.63	7	29.41	20	1.22	22.4	−0.8	49.0	20	30.7	−10.5	20	14.9	59.5	27.5	20	5.5	5	86.7	18.6	3.12	+0.37	3,129	e.	36	sw.	24	14	14	10	7
Walla Walla	...	28.99	...	...	...	...	...	...	1.28	25.8	...	59.8	29	33.5	−5.0	20	19.0	64.8	42.0	24	5.2	23	85.5	21.5	3.45	...	4,419	sw.	30	sw.	24	18	13	14	4
N. Pac. coast region.																																			
Fort Canby	179	29.72	...	29.92	30.50	7	29.12	23	1.38	40.1	...	51.5	11	44.3	21.0	18	36.7	30.5	12.2	10	3.3	12	93.2	38.1	6.33	...	11,838	se.	68	sw.	24	21	11	14	6
Neah Bay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Olympia	36	29.95	−.09	30.00	30.60	7	29.21	23	1.40	36.6	−1.6	53.5	29	41.9	15.1	17	30.7	38.4	21.5	23	4.5	29	88.1	33.3	9.47	+0.99	3,815	s.	23	ne.	14	21	18	10	3
Port Angeles	14	29.95	...	29.97	30.59	7	29.03	23	1.55	33.2	...	49.0	29	39.4	6.6	18	23.3	42.4	26.7	18	9.9	19	93.1	31.3	5.54	...	3,252	s.	35	ne.	14	19	17	12	2
Pysht	...	...	...	...	...	...	...	...	...	35.5	...	49.0	1	40.2	17.0	21	30.9	32.0	...	...	...	...	...	...	11.44	...	...	...	...	...	...	23	...	...	...
Tatoosh Island	860	29.83	...	29.94	30.55	7	29.00	23	1.55	39.5	...	51.5	29	43.0	20.6	19	35.3	30.9	23.4	23	3.9	10	78.4	33.1	10.82	...	14,4[illegible]3	e.	54	e.	19	23	19	10	2
Astoria	...	...	...	...	...	...	...	...	...	39.5	...	55.0	20	44.1	20.0	18	34.9	35.0	...	...	...	...	...	...	13.24	...	...	...	...	...	...	24	...	...	...
Portland	80	29.93	−.10	30.02	30.56	7	29.30	20	1.27	36.1	−3.1	60.0	29	43.3	15.0	19	31.7	45.0	23.0	23	6.2	16	85.5	32.0	9.33	+2.45	3,020	s.	22	s.	26	2[illegible]	17	10	4
Roseburg ‡	523	29.46	−.13	30.03	30.49	7	29.12	20	1.36	41.2	+0.7	62.2	29	48.9	22.7	17	36.0	39.5	21.0	3	6.1	30	85.8	36.9	7.59	+1.56	1,241	s.	20	sw.	14	[illegible]0	15	12	4
Mid. Pac. coast reg.																																			
Cape Mendocino	637	29.34	−.11	30.02	30.36	3	29.06	20	1.30	48.0	+0.4	61.1	7	52.7	33.7	17	43.5	27.4	23.1	7	4.4	30	88.5	44.5	4.61	+2.58	15,736	se.	144	se.	20	18	10	13	9
Red Bluff	332	29.73	−.09	30.03	30.43	3	29.35	19	1.08	46.2	+0.5	64.5	28	54.3	30.0	3	39.3	34.5	27.5	9	5.0	26	83.3	40.6	4.85	−0.70	5,659	n.	50	se.	20	12	8	9	14
Sacramento	64	30.04	−.06	30.09	30.40	3	29.32	19	1.08	45.7	−0.4	62.2	25	52.0	27.5	7	40.4	34.7	21.5	7	3.5	30	89.0	42.6	7.95	+4.21	5,366	se.	44	se.	20	13	6	11	14
San Francisco	60	30.03	−.07	30.08	30.39	3	29.31	19	1.08	50.9	+0.3	67.5	20	56.5	41.0	2	45.8	26.5	19.0	20	5.8	24	78.9	44.0	7.42	+2.59	5,224	n.	42	se.	20	14	13	9	10
S. Pac. coast region.																																			
Los Angeles	339	29.70	−.03	30.06	30.34	3	29.68	19	0.66	54.7	+2.1	75.3	29	63.6	32.0	2	47.0	43.3	28.2	6	5.7	11	77.8	47.0	7.78	+5.72	5,228	e.	37	w.	19	10	12	6	13
San Luis Obispo	270	29.76	...	30.04	30.29	3	29.50	18	0.79	53.0	...	73.6	29	61.4	32.9	3	46.7	40.7	28.1	3	5.8	24	80.6	46.7	5.79	...	5,806	n.	34	s.	19	13	12	8	11

* Humidity and dew-point for 30 days. † 100.1. ‡ Humidity and dew-point for 17 days. § Record for 25 days. ‖ Record for 29 days.

Mount Washington, New Hampshire: an aurora of a pale green color was observed at 8.28 p. m. of the 1st, having an altitude of about 10°.

Saint Vincent, Minnesota: an aurora was observed at 7.20 p. m. of the 2d, extending from 170° to 270° azimuth, consisting of a poorly defined arch, of 15° altitude above a dark segment, from which a few streamers were observed to shoot up to an altitude of about 30°; the display lasted until daylight of the 3d.

Pensacola, Florida: the Signal Service observer at this place reports that a pale white light resembling a faint aurora was observed in the southwest between 10 and 11 p. m. of the 7th, characterized by recurring fits of brilliancy, and was seen until the sky became obscured.

Saint Vincent, Minnesota: an aurora was observed at 9.40 p. m. of the 8th, consisting of a poorly defined arch of whitish color, extending from 160° to 260° azimuth and with an altitude of 15°; the dark segment was well defined; at 6.20 a. m. of the 9th the arch formation changed to that of slender beams extending from 145° to 270° azimuth, several of which attained an altitude of 45°; the display faded away at daylight.

Fort Totten, Dakota: an auroral light was observed at 9.45 p. m. of the 8th, having an altitude of 20° and azimuth 100°; an occasional streamer was seen; the aurora continued until 5 a. m. of the 9th.

Saint Vincent, Minnesota: an auroral arch extending from 170° to 270° azimuth, with an altitude of 30°, was observed at 9 p. m. of the 9th, the lower edge was well defined, showing clearly the dark segment; at 10.30 p. m. the arch broke, when the aurora assumed the appearance of several irregular patches of white light from which numerous streamers of a pale yellow color shot up to an altitude of 45° to 60°, having a rapid lateral motion from right to left; the display continued until 1.15 a. m. of the 10th.

Captain M. de Josselin, of the s. s. "Saint Laurent," reports that an aurora was observed from 4.45 to 6 a. m. of the 9th, extending from west-northwest to northeast; the rays were red and white and had an altitude of 70° above the horizon; stars of the first magnitude were visible through the white rays. The ship's position at 5 a. m. was latitude 44° 30′ north, longitude 53° 3′, west of Paris.

Poplar River, Montana: an auroral arch was observed from 8.50 to 11.30 p. m. of the 9th, having an altitude of 15°; a dark segment was observed to the left of the arch.

Yankton, Dakota: a faint auroral arch with a few indistinct streamers was observed from 7 to 8.30 a. m. of the 9th.

Fort Smith, Arkansas: an auroral band of a silvery color, narrow but well defined, extending from the horizon to about 40° in altitude, was observed at 3 a. m. of the 11th; the upper extremity was very bright while the lower end was surrounded by a diffuse light of a reddish color.

Saint Vincent, Minnesota: an aurora was observed at 6.15 a. m. of the 14th, consisting of a pale diffused light extending from 170° to 250° azimuth with an altitude of 15°; a few streamers were noticed at intervals shooting up to an altitude of 25°.

Manistique, Schoolcraft county, Michigan: an aurora was observed at 8.30 p. m. of the 28th, of 200° azimuth; at 1.29 a. m. of the 29th it extended from 135° to 270° azimuth with an altitude of 35°, at which time it was a bright yellow diffuse light; at 2.30 a. m. it was covered by cirro-stratus clouds.

Saint Vincent, Minnesota: a faint auroral light was observed at 9 p. m. of the 28th, extending from 160° to 250° azimuth with an altitude of 20°; the display lasting until after midnight.

Escanaba, Michigan: an auroral arch above a narrow segment was observed from 10.35 to 11.26 p. m. of the 29th; the color was a bright orange; the arch extended from the northwest to the northeast points of the compass, and had an altitude of about 40°.

Manistique, Schoolcraft county, Michigan: an auroral arch, 8° in width, was observed from 8 p. m. of the 29th until daylight of the 30th, having an altitude of 25°, and extending from 135° to 225° azimuth.

Manistique, Schoolcraft county, Michigan: a moderately bright auroral arch was observed from 7.30 to 8.30 p. m. of the 30th; the arch was 10° in width, and had an altitude of 25°; cirro-stratus clouds were seen beneath the arch.

The following stations report auroras, the observers giving dates only:

1st.—Kent's Hill and Cornish, Maine; Fort Totten, Dakota; Winnipeg, Manitoba.

2d, 3d, 4th.—Winnipeg, Manitoba.

7th.—Cambridge, Massachusetts (suspected).

8th.—Kent's Hill, Maine; Winnipeg, Manitoba; Fredericton, New Brunswick.

9th.—Fort Totten, Dakota; Yutan, Nebraska; Winnipeg, Manitoba.

10th.—Fort Totten, Dakota; Yutan and Harvard, Nebraska; Winnipeg, Manitoba.

11th.—Reidsville, North Carolina; Winnipeg, Manitoba.

12th, 14th, 20th.—Oakland, California.

14th.—Winnipeg, Manitoba.

22d, 23d, 26th.—Winnipeg, Manitoba.

28th.—Webster and Fort Totten, Dakota; Moorhead, Minnesota; Winnipeg, Manitoba.

29th.—Bismarck, Dakota; Riley, Illinois; Manistique and Mackinaw, City, Michigan; Madison, Wisconsin; Duluth, Minnesota.

30th.—Winnipeg, Manitoba.

THUNDER-STORMS.

Thunder-storms were reported in the various states and territories, as follows:

Alabama.—Montgomery, 3d, 20th; Mobile, 3d; Birmingham, 2d, 3d; Greensborough, 1st, 3d.

Arizona.—Fort Apache, 19th.

Arkansas.—Fort Smith and Lead Hill, 2d; Little Rock, 26th.

California.—Sacramento, 20th; Los Angeles, 19th; Fall Brook and Poway, 16th; Salinas and Cahuenga Valley, 18th, 19th.

Florida.—Sanford, Cedar Keys, Archer, Merritt's Island, and Fort Meade, 24th; Key West, 23d; Pensacola, 8th, 18th, 31st.

Georgia.—Atlanta and Milledgeville, 21st; Quitman, 24th.

Illinois.—Peoria, 3d.

Kansas.—Fort Scott, 2d.

Louisiana.—New Orleans, 3d, 18th; Liberty Hill, 2d, 26th; Grand Coteau, 1st, 2d, 18th, 22d; Shreveport, 1st, 2d; Morgan City, 18th; Point Pleasant, 2d, 7th, 26th.

Missouri.—Centreville, 3d.

Montana.—Helena, 24th.

Nebraska.—Fairbury, 20th.

North Carolina.—Charlotte, Smithville, and Lincolnton, 21st; Fort Macon, 21st, 31st; Weldon, 31st.

Oregon.—Astoria, 20th; Albany, 23d.

Pennsylvania.—Quakertown, 4th, 5th; Dillingersville, 5th.

South Carolina.—Charleston, Stateburg, and Aiken, 21st; Spartanburg, 21st, 29th.

Tennessee.—Nashville, Memphis, and Milan, 2d.

Texas.—Palestine, 1st, 2d; San Antonio, New Ulm, and Cleburne, 1st; Galveston, 17th, 18th, 22d; Brownsville, 22d.

Utah.—Salt Lake City, 21st, 25th.

Wyoming.—Fort Bridger, 21st.

ELECTRICAL PHENOMENA.

Dodge City, Kansas: the atmosphere during the 7th was highly charged with electricity; the batteries were removed from the telegraph lines and messages sent between this place and Fort Supply, Indian Territory; the sky being obscured, no aurora was observed; at the Western Union telegraph office sparks from five to six inches long flew from the key.

Fort Supply, Indian Territory: the atmosphere was so heavily charged with electricity on the 7th that upon opening the key a continuous stream of electricity could be seen passing from the key to the anvil, and of sufficient intensity to light a match when the head was placed near the anvil.

Captain Joseph Collier, of the s. s. "Cholmley," in the Straits of Gibraltar on the 27th, experienced heavy squalls, with thunder, lightning, and hail, during which the masts, spars, and all pointed objects were tipped with a phosphorescent light.

OPTICAL PHENOMENA.

SOLAR HALOS.

Solar halos were observed in the various states and territories, as follows:

Alabama.—10th.
Arizona.—7th to 10th.
California.—7th, 8th, 9th, 11th, 13th, 15th, 25th, 27th.
Colorado.—7th, 12th, 28th.
Connecticut.—3d, 8th, 11th, 20th.
Dakota.—1st, 8th, 14th, 16th, 17th, 18th, 20th, 23d, 26th.
Florida.—1st, 3d, 8th, 17th, 21st to 24th.
Georgia.—14th, 22d.
Idaho.—8th, 9th.
Illinois.—1st, 6th, 9th.
Indiana.—12th, 17th, 22d, 27th, 30th.
Indian Territory.—21st.
Iowa.—9th, 10th, 11th, 16th, 21st, 22d, 29th.
Kansas.—8th, 9th, 12th, 16th, 21st, 22d.
Kentucky.—12th.
Maine.—11th, 13th.
Maryland.—26th.
Massachusetts.—18th, 31st.
Michigan.—1st, 2d, 8th, 12th.
Minnesota.—4th, 19th, 23d.
Montana.—18th, 25th.
Nebraska.—17th.
Nevada.—10th, 18th.
New Jersey.—18th, 20th.
New Mexico.—16th.
New York.—2d, 8th, 15th, 16th, 18th, 20th, 23d.
North Carolina.—27th.
Ohio.—1st, 12th, 13th, 14th, 20th, 21st, 24th, 30th.
Pennsylvania.—8th, 15th.
South Carolina.—1st, 12th, 23d.
Tennessee.—1st, 6th, 9th, 14th, 17th, 20th, 30th.
Utah.—11th.
Virginia.—1st, 2d, 8th, 15th, 18th.
Washington Territory.—19th.
Wisconsin.—9th, 10th, 12th, 21st, 22d, 23d, 29th.
Wyoming.—1st, 3d, 9th to 13th, 16th, 17th.

LUNAR HALOS.

Lunar halos were observed in the various states and territories, as follows:

Alabama.—17th.
Arizona.—9th, 11th, 15th, 16th, 18th, 20th.
Arkansas.—11th, 16th, 21st.
California.—11th, 13th to 16th, 19th, 20th, 22d, 26th.
Colorado.—10th, 11th, 13th, 14th, 18th, 20th, 25th.
Connecticut.—10th, 16th, 18th.
Dakota.—1st, 13th, 14th, 16th to 20th.
District of Columbia.—12th, 20th, 22d.
Florida.—15th, 17th, 18th.
Georgia.—14th, 17th, 18th, 22d.
Idaho.—11th, 21st, 28th.
Illinois.—17th, 19th, 21st, 22d, 24th, 26th.
Indiana.—14th, 16th, 17th, 19th, 22d.
Indian Territory.—16th.
Iowa.—7th, 12th, 16th, 17th, 21st, 22d, 23d.
Kansas.—8th, 10th, 16th, 20th, 21st, 24th.
Kentucky.—14th, 17th.
Maine.—11th, 16th, 18th, 20th.
Maryland.—12th, 15th, 22d.
Massachusetts.—12th, 16th, 18th, 19th, 20th.
Michigan.—10th, 12th, 13th, 14th, 19th, 21st.
Minnesota.—13th to 18th.
Montana.—14th to 18th, 22d.
Nebraska.—15th, 16th, 17th, 22d, 25th.
Nevada.—10th, 11th, 15th, 24th.
New Hampshire.—11th, 15th, 18th, 24th.
New Jersey.—15th, 18th, 20th.
New Mexico.—10th, 11th, 13th, 15th, 16th, 17th.
New York.—8th, 14th, 15th, 16th, 18th, 20th, 21st.
North Carolina.—17th, 19th.
Ohio.—2d, 10th, 11th, 12th, 14th, 21st, 22d.
Oregon.—17th.
Pennsylvania.—12th, 15th, 19th, 20th.
South Carolina.—12th, 15th. 17th, 18th, 19th.
Tennessee.—14th, 17th, 19th.
Texas.—11th, 12th, 14th, 15th, 16th, 20th, 21st, 22d, 24th, 25th, 26th.
Utah.—25th.
Vermont.—15th, 16th, 18th, 23d.
Virginia.—12th, 13th, 15th, 17th to 20th.
Washington Territory.—15th, 19th.
West Virginia.—12th, 14th, 19th.
Wisconsin.—10th, 19th.
Wyoming.—12th, 15th, 17th, 18th.

The phases of the moon during January were: new moon, 4th, 2.35 a. m.; first quarter, 12th, 7.16 a. m.; full moon, 19th, 2.36 a. m.; last quarter, 26th, 8.23 p. m.; apogee, 6th, 4.01 a. m.; perigee, 19th, 8.02 p. m.

MIRAGE.

Cahuenga Valley, California, 30th.
Cedar Keys, Florida, 19th.
Harvard, Nebraska, 25th.
Fort Grant, Arizona, 24th, 25th, 27th.
Reidsville, North Carolina, 7th.
Saint Vincent, Minnesota, 11th, 12th.

MISCELLANEOUS PHENOMENA.

SUN SPOTS.

Prof. David P. Todd, director of the Lawrence Observatory, Amherst, Massachusetts, furnishes the following record of sun spots for January, 1886:

Date—January, 1886. Standard time.	No. of new.		Disappeared by solar rotation.		Reappeared by solar rotation.		Total No. visible.		Remarks.
	Gr'ps	Spots	Gr'ps	Spots	Gr'ps	Spots	Gr'ps	Spots	
1, 4 p. m.	1	3	.....	.....	.....	.....	2	20‡	
2, 4 p. m.	1	10‡	0	5‡	1	10‡	3	25‡	
5, 3 p. m.	0	40‡	.....	.....	.....	.....	2	60‡	
8, 8 a. m.	1	10‡	.....	.....	.....	.....	2	35‡	
10, 4 p. m.	0	5‡	.....	.....	.....	.....	2	40‡	Two spots quite large.
11, 2 p. m.	0	0	0	0	0	0	2	40‡	
12, 3 p. m.	0	15‡	0	0	0	0	2	55‡	
13, 2 p. m.	1	60‡	0	5‡	1	15‡	4	110‡	
14, 4 p. m.	0	10‡	0	5‡	0	10‡	4	115‡	
15, 2 p. m.	0	0	1	3	0	0	3	110‡	One of the spots very large.
18, 10 a. m.	2	6	.....	.....	.....	.....	5	85‡	One of the spots very large.
20, 11 a. m.	0	0	.....	.....	0	0	5	20‡	Broad areas of faculæ.
23, 12 m	0	0	.....	.....	0	0	0	0	
26, 12 m	0	0	0	0	0	0	0	0	
31, 10 a. m.	1	5	0	0	.....	.....	1	5	

Faculæ were seen at the time of every observation. ‡Approximated.

Mr. H. D. Gowey, of North Lewisburg, Champaign county, Ohio, reports having observed sun spots on the following dates: 1st, 4th, 7th, 11th to 14th, 17th, 19th, 30th.

SUNSETS.

The characteristics of the sky, as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal Service stations. Reports from one hundred and sixty stations show 4,933 observations to have been made, of which four were reported doubtful; of the remainder, 4,929, there were 4,349, or 88.2 per cent., followed by the expected weather.

EARTHQUAKES.

Nashua, Hillsborough county, New Hampshire: an earthquake shock of about ten seconds' duration was generally felt in this section of the state at 5.14 p. m. of the 17th; it was accompanied by a noise similar to that made by a heavy wagon drawn rapidly over frozen ground, or deep thunder; vibration, if any, probably from north to south.